

Marine Life Protection Act Initiative



Draft Regional Profile of the North Central Coast Study Region - Part 1

Presentation to the MLPA North Central Coast Regional Stakeholder Group

May 23, 2007 • San Rafael, CA

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North Central Coast Regional Profile

Purpose:

- Provide contextual information on the ecological and socioeconomic setting of the study region
- Reflect local knowledge of stakeholders / public, scientists, MLPA and Department staff
- Support evaluation of existing state MPAs and development of alternative MPA proposals



Draft Regional Profile

- Regional profile is a work product of the stakeholder group process
- Draft profile assembled by MLPA/DFG staff
- Profile finalized over time with input from stakeholders
- There will be opportunities to:
 - provide comments on document
 - provide and share additional information and local knowledge



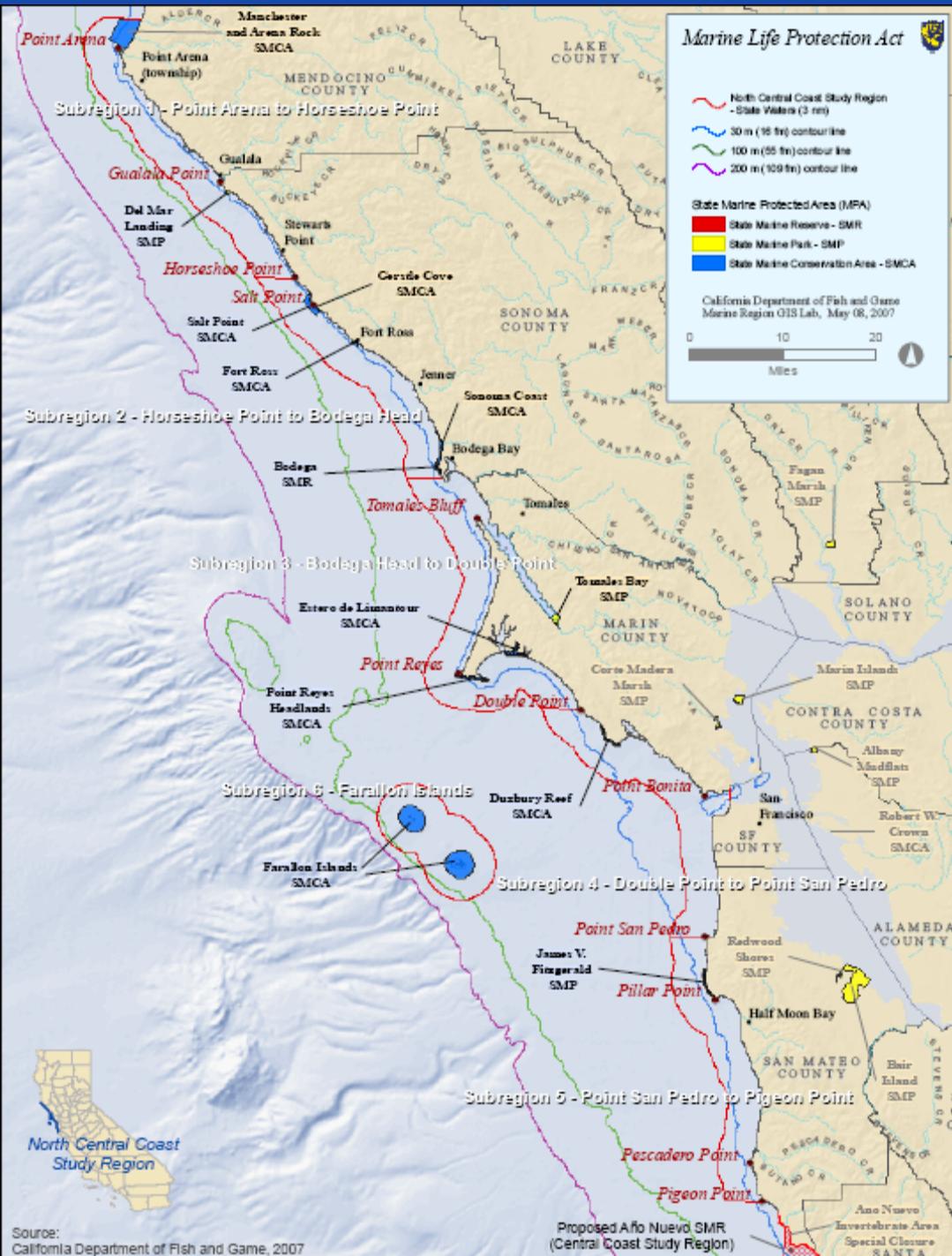
Draft Regional Profile Content

- Regional overview
- Ecological setting
- Land-sea interface
- Socioeconomic setting
- Research / monitoring
- Jurisdiction / management
- Existing MPAs and marine managed areas
- Subregional summaries
- Maps of some spatial data layers
- Web link to marine spatial database (www.marinemap.org/mlpa)
- Web links to more information and other resources



Study Region

- North Central Coast Study Region
 - Alder Creek / Point Arena to Pigeon Point
 - Farallon Islands
 - not including SF Bay
- Area: 763 sq. miles
- North-south extent: 146 miles
- Existing state MPAs: 13





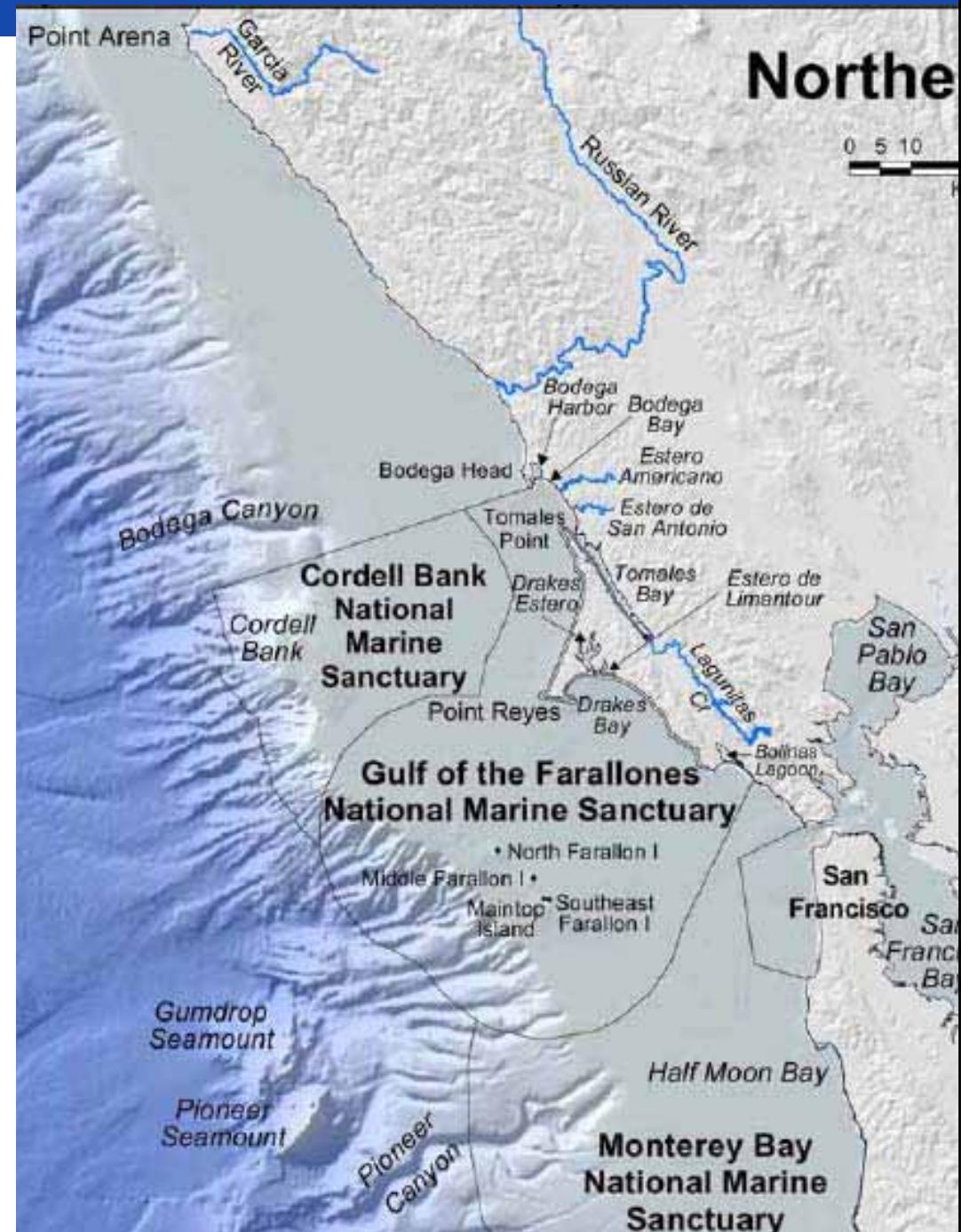
Subregions for Display and Evaluation

1. Point Arena to Horseshoe Point
2. Horseshoe Point to Bodega Head
3. Bodega Head to Double Point
4. Double Point to Point San Pedro
5. Point San Pedro to Pigeon Point
6. Farallon Islands



Regional Overview

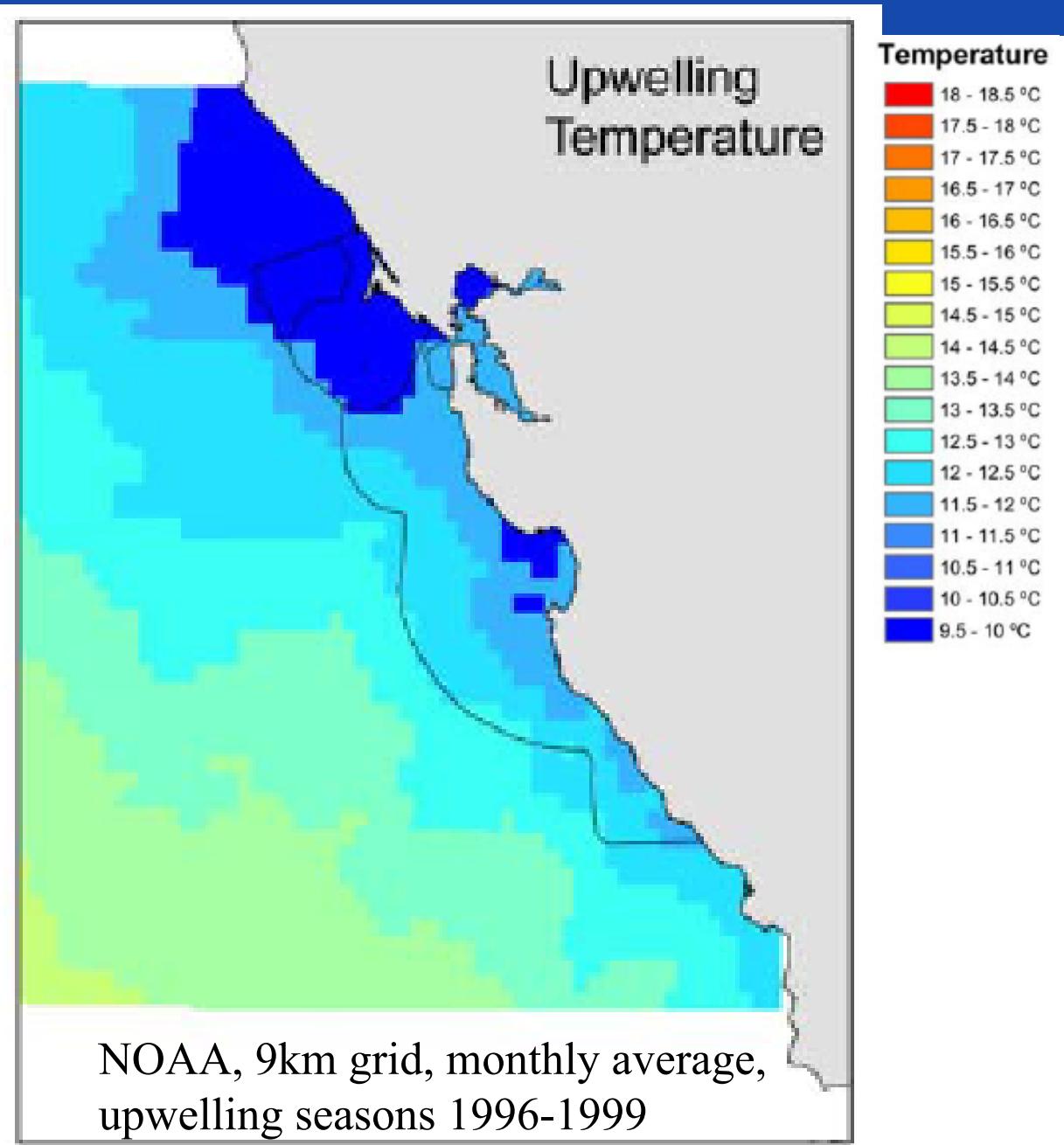
- Highly productive upwelling region
- Broad, flat continental shelf; relatively shallow depths in state waters
- Farallon islands – 28 miles offshore
- Point Reyes – major headland
- Outlet of largest estuary on West Coast





Regional Overview

- Upwelling system:
Point Arena and
Point Reyes
upwelling centers
- Seasonal
upwelling
throughout
northern half of
region
- Fuels highly
productive coastal
and pelagic
ecosystems





Regional Overview

- Large numbers of top predators (seabirds, marine mammals, sharks)
- Farallon Islands – largest # of nesting seabirds (12 spp.) in continental U.S.
- Highly productive fisheries
 - Dungeness crab, salmon



Scot Anderson





Ecological Setting: Habitats

Habitats that must be represented under the MLPA:

“...rocky reefs, intertidal zones, sandy or soft ocean bottoms, underwater pinnacles, seamounts, kelp forests, submarine canyons, and seagrass beds.” [Fish and Game Code, Section 2856(a)(2)(A)]

Recommendation of SAT for additional habitats that should be represented:

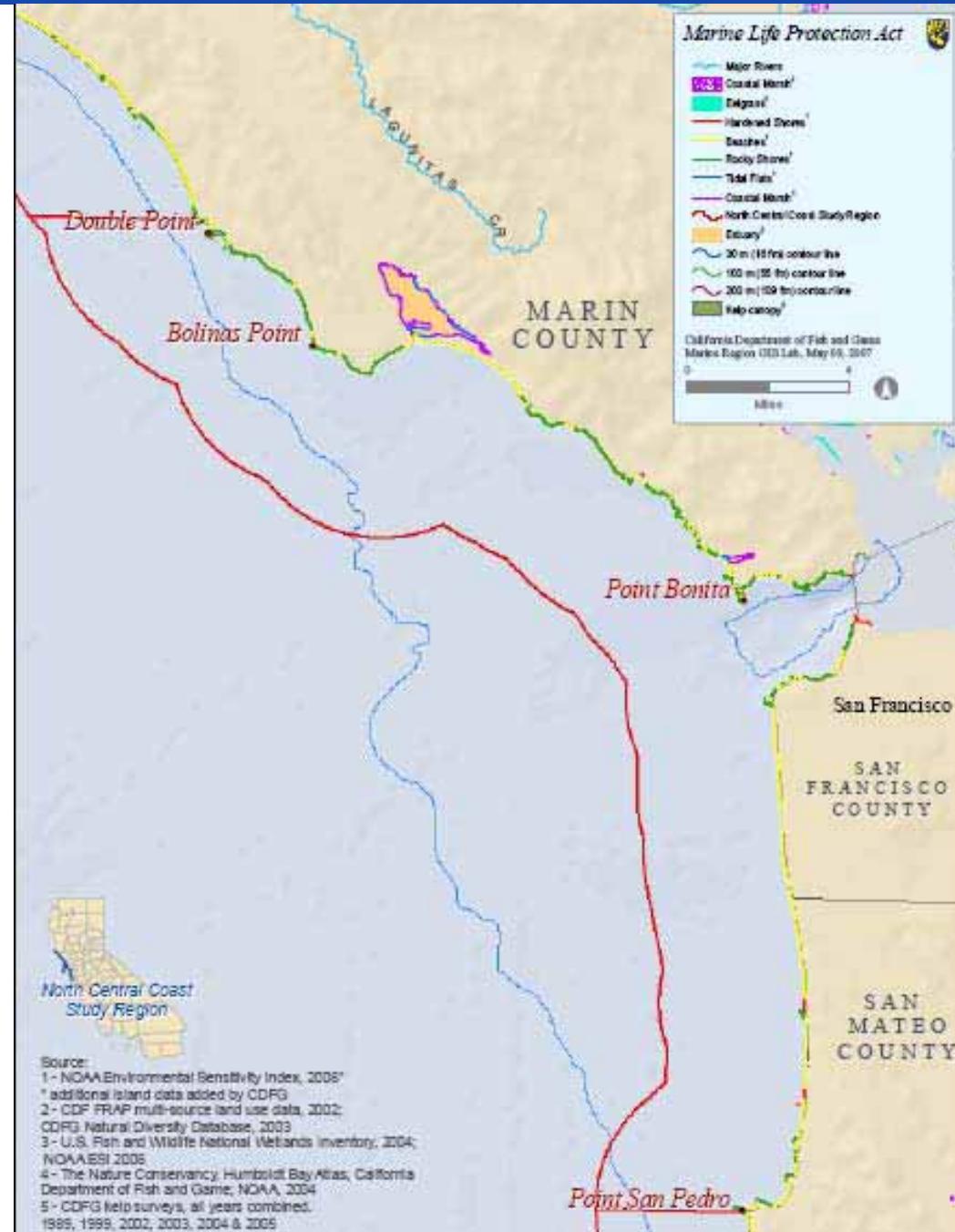
- Five depth zones: intertidal, intertidal to 30 meters, 30 to 100 meters, 100-200 meters, and deeper than 200 meters
- Centers of upwelling typically associated with major points and headlands
- Plumes associated with streams and rivers
- Retention features characterized by restricted ocean currents such as gyres, eddies, or regions in the lee of headlands



Intertidal (Shoreline) Habitats

Overall (NOAA-ESI data):

- Sandy beaches 51%
- Rocky shores 46%
- Coastal marsh 14%
- Tidal flats 16%
- Total >100% as more than one type at many locations
- More rocky coast in northern half, more sandy beaches in southern half





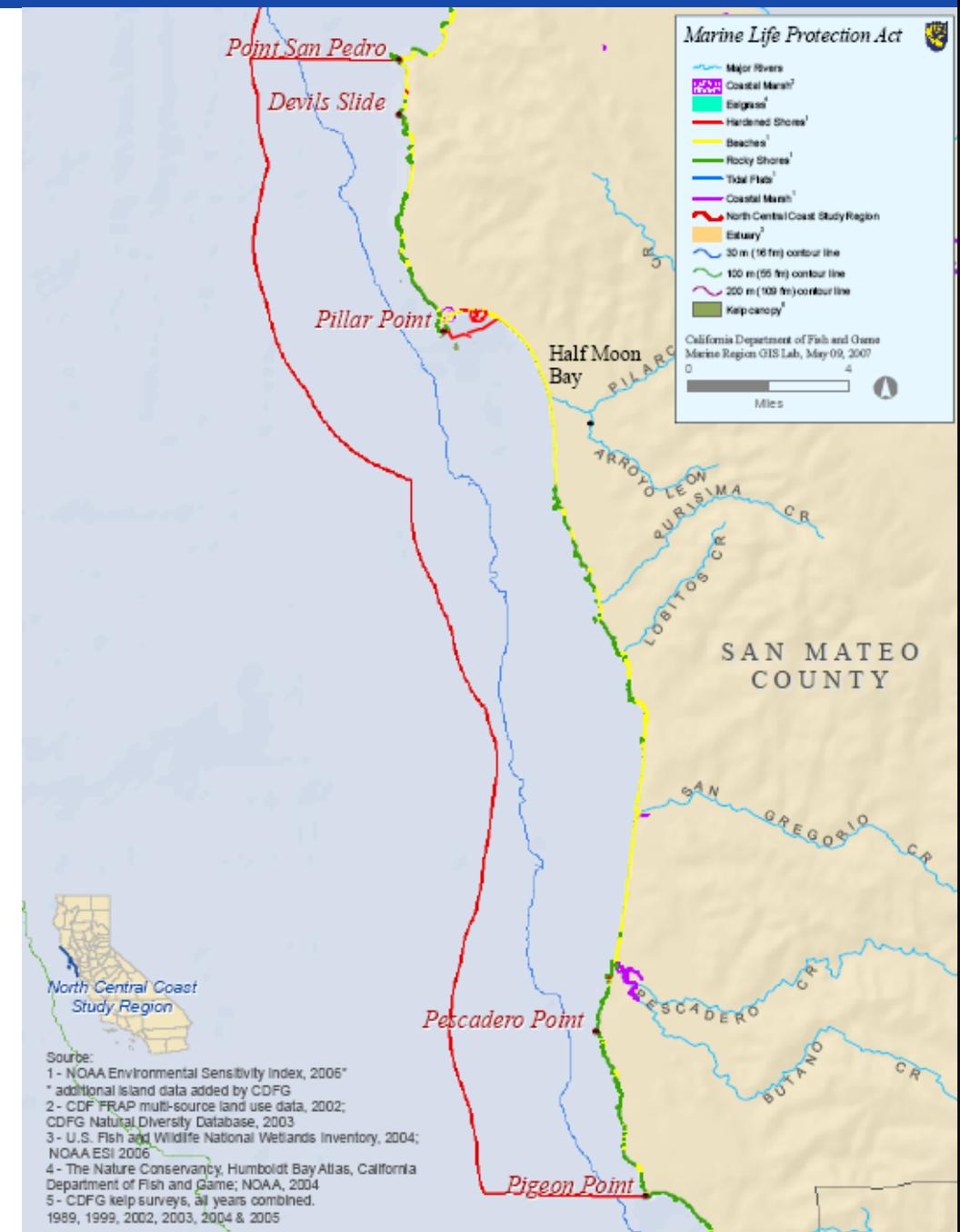
Shoreline Habitats

Sandy Beaches

Gravel	7.9%
Mixed sand/gravel	13.2%
Coarse sand	6.5%
Fine sand	23.5%

Rocky Shores

Exposed rocky cliffs	12.2%
Wave-cut platforms	29.0%
Sheltered rocky shores	4.8%





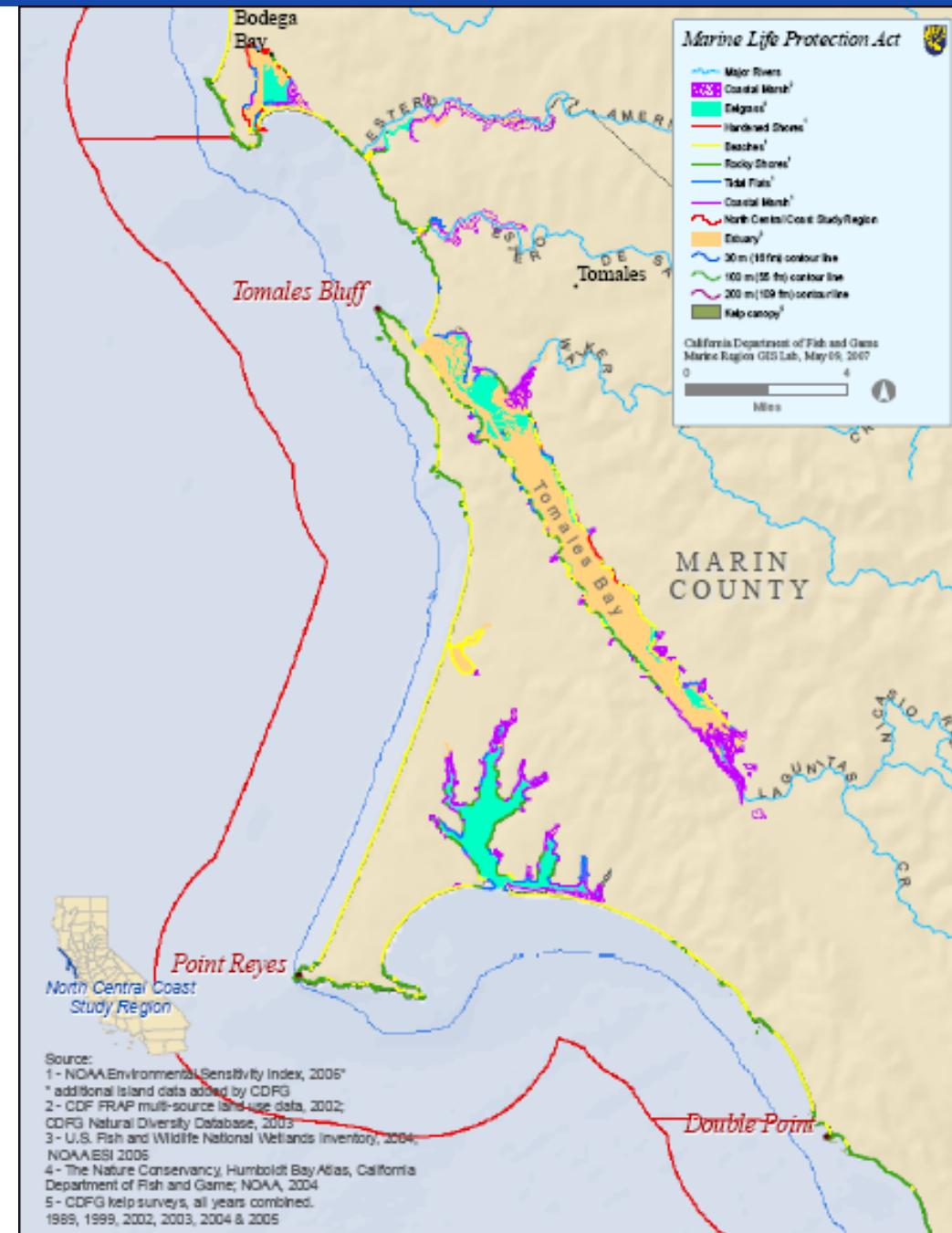
Shoreline Habitats

Coastal Marshes

Salt and Brackish Marshes 14.3%

Tidal Flats

Exposed 2.5%
Sheltered 14.0%

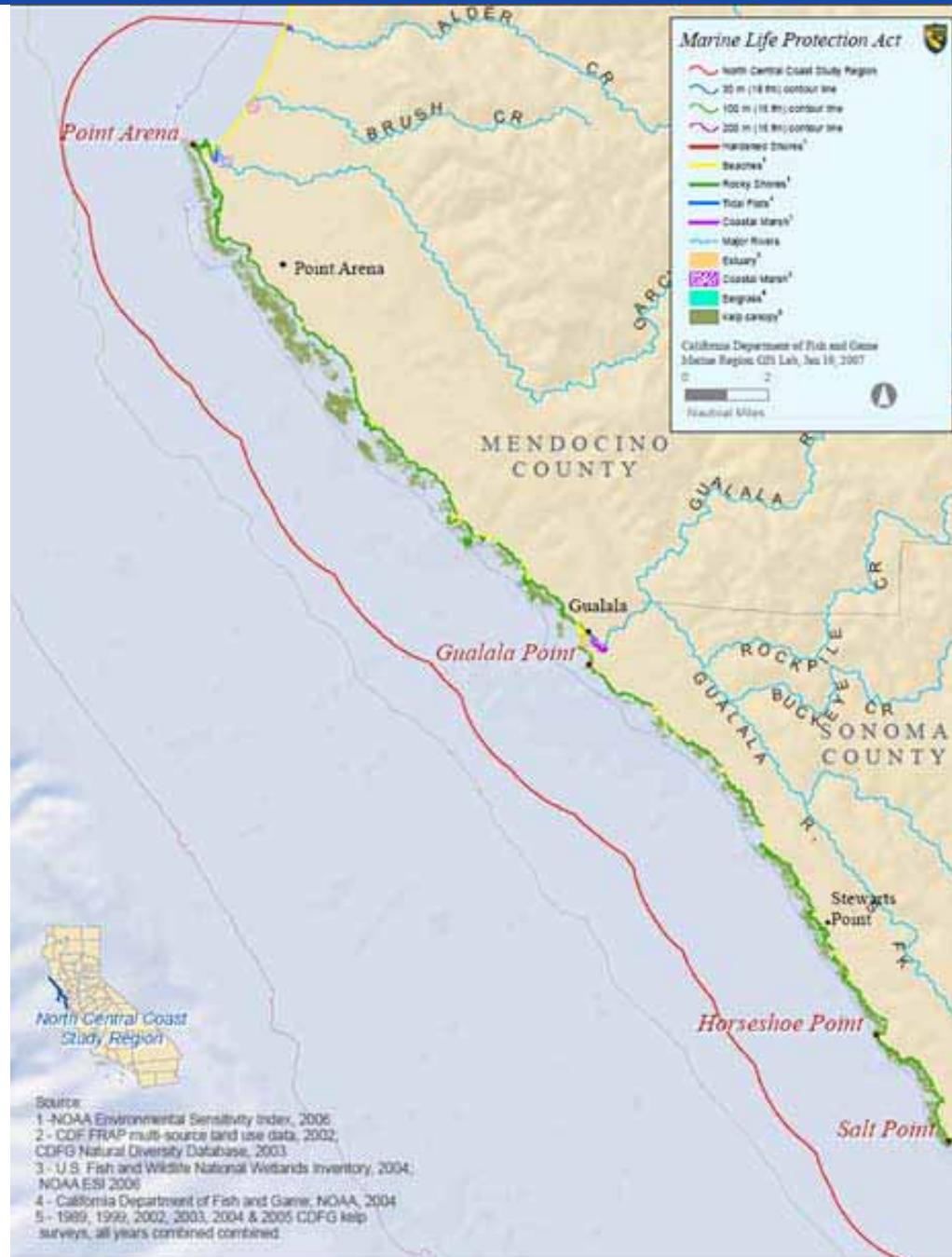




Near-Shore habitats

Kelp

- Dominated by Bull Kelp (*Nereocystis lutkeana*)
- 6 years of DFG survey data
- Kelp more abundant in northern half
- Ranges from 3.4 mi² of kelp in 1989 to 0.9 mi² in 2005; 1.8 mi² average over six years
- No commercial kelp harvest in study region

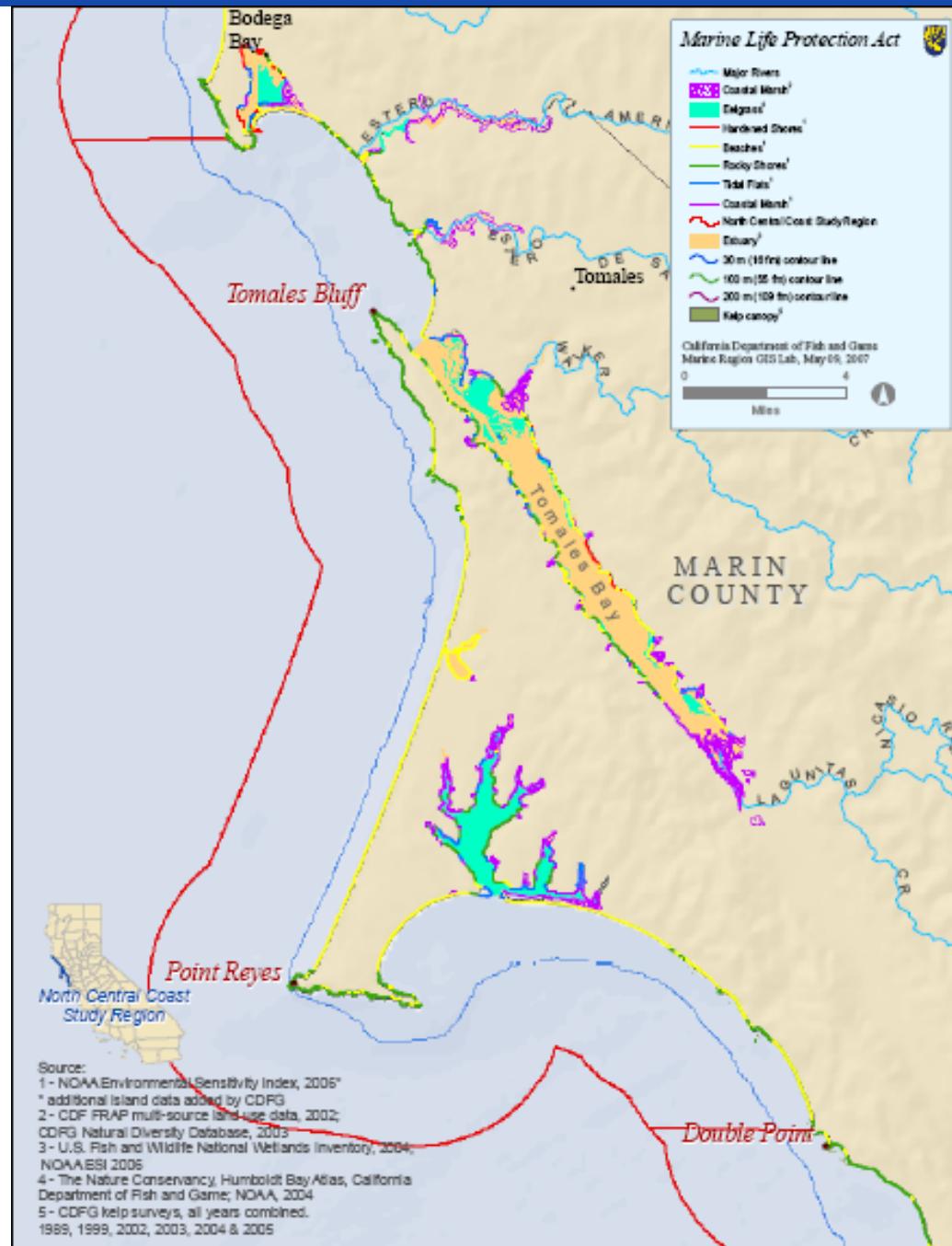




Near-Shore Habitats

Seagrass

- Surfgrass – 18.9% of study region (by length), on exposed coast
- Eelgrass – 0.8% of study region (by area); in most estuaries

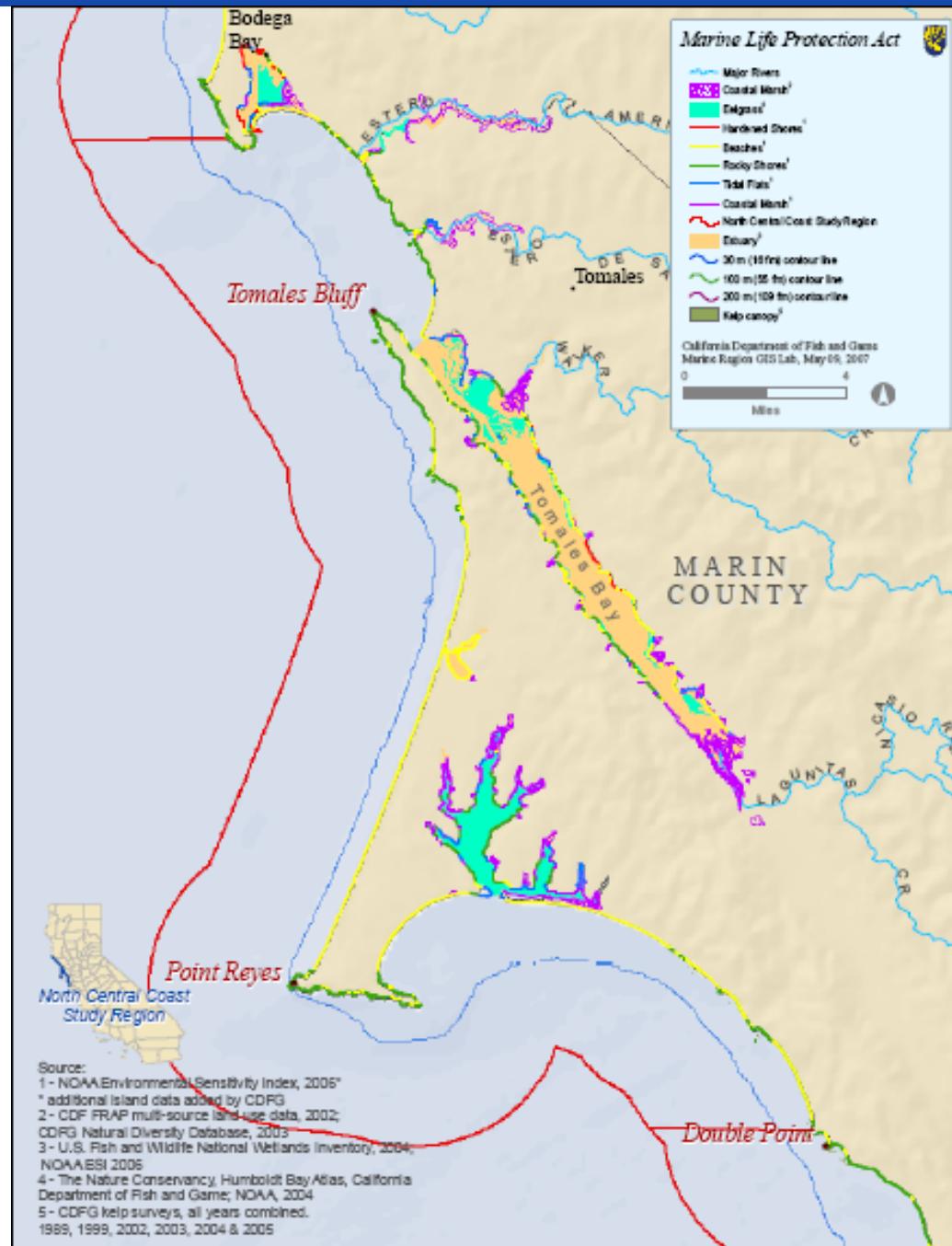




Near-Shore Habitats

Estuaries and Lagoons

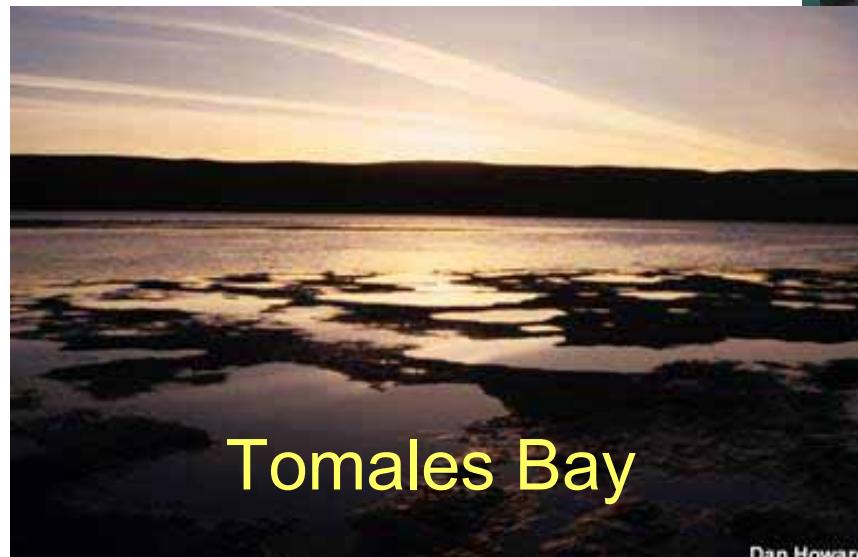
- ~20 sq. miles or 2.5% of area of study region
- More and larger estuaries in northern portion of study region



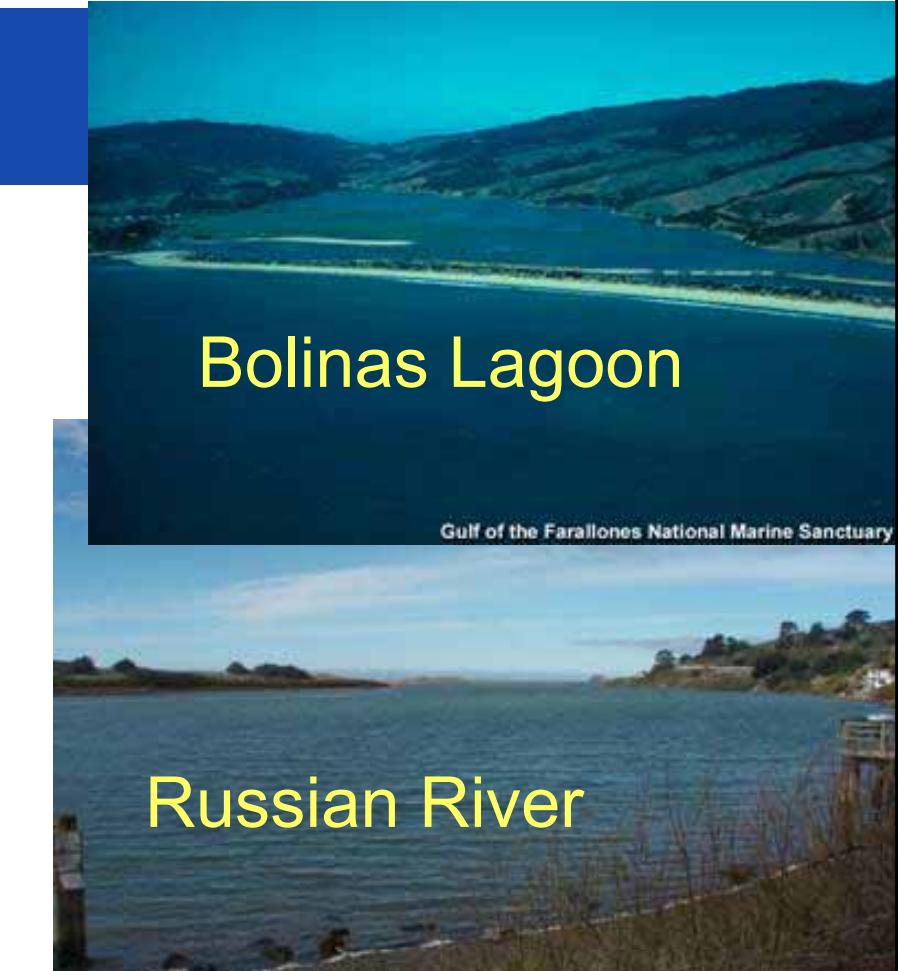


Near-Shore Habitats

- Coastal estuaries and lagoons: Garcia, Gualala, Russian, Tomales, Estero Americano, Estero San Antonio, Drakes Estero, Bolinas, Rodeo Lagoon, Pescadero



Tomales Bay



Bolinas Lagoon

Gulf of the Farallones National Marine Sanctuary

Russian River

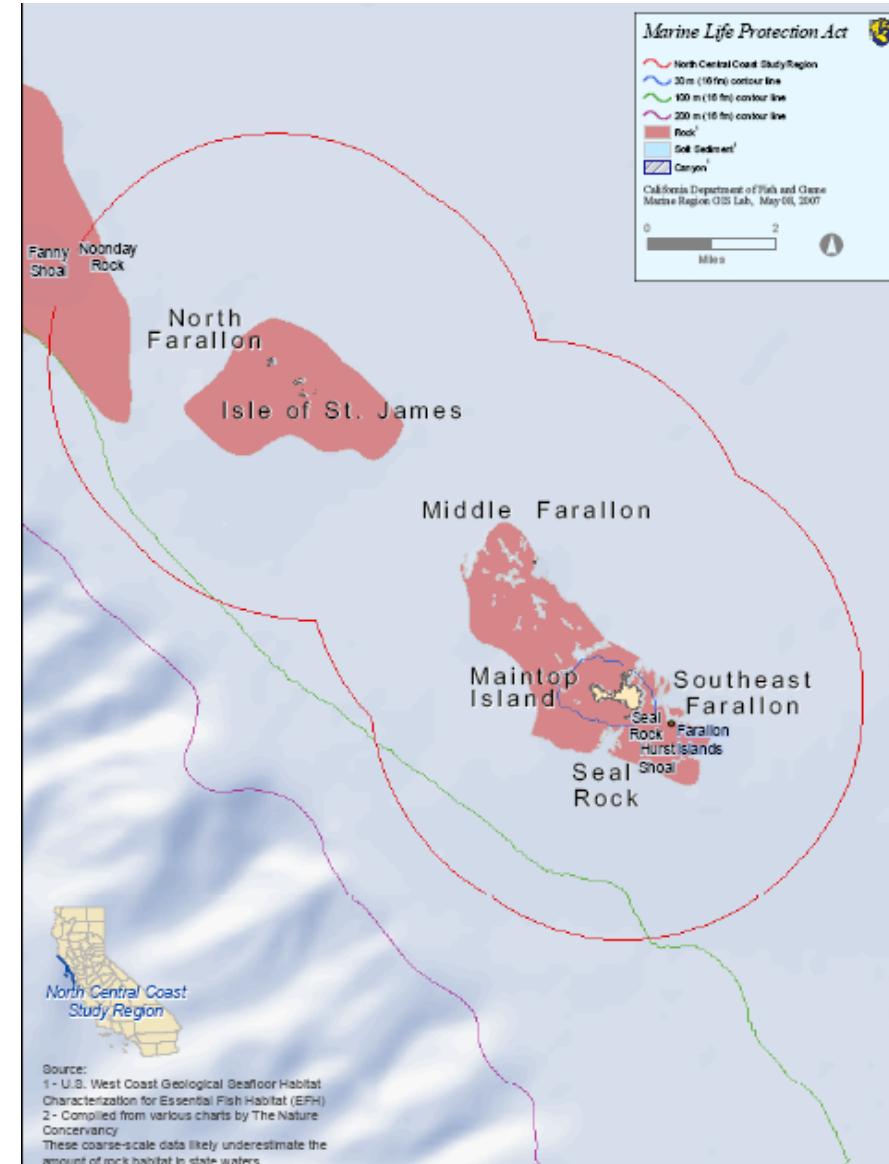


Garcia River



Seafloor Habitats and Depth Zones

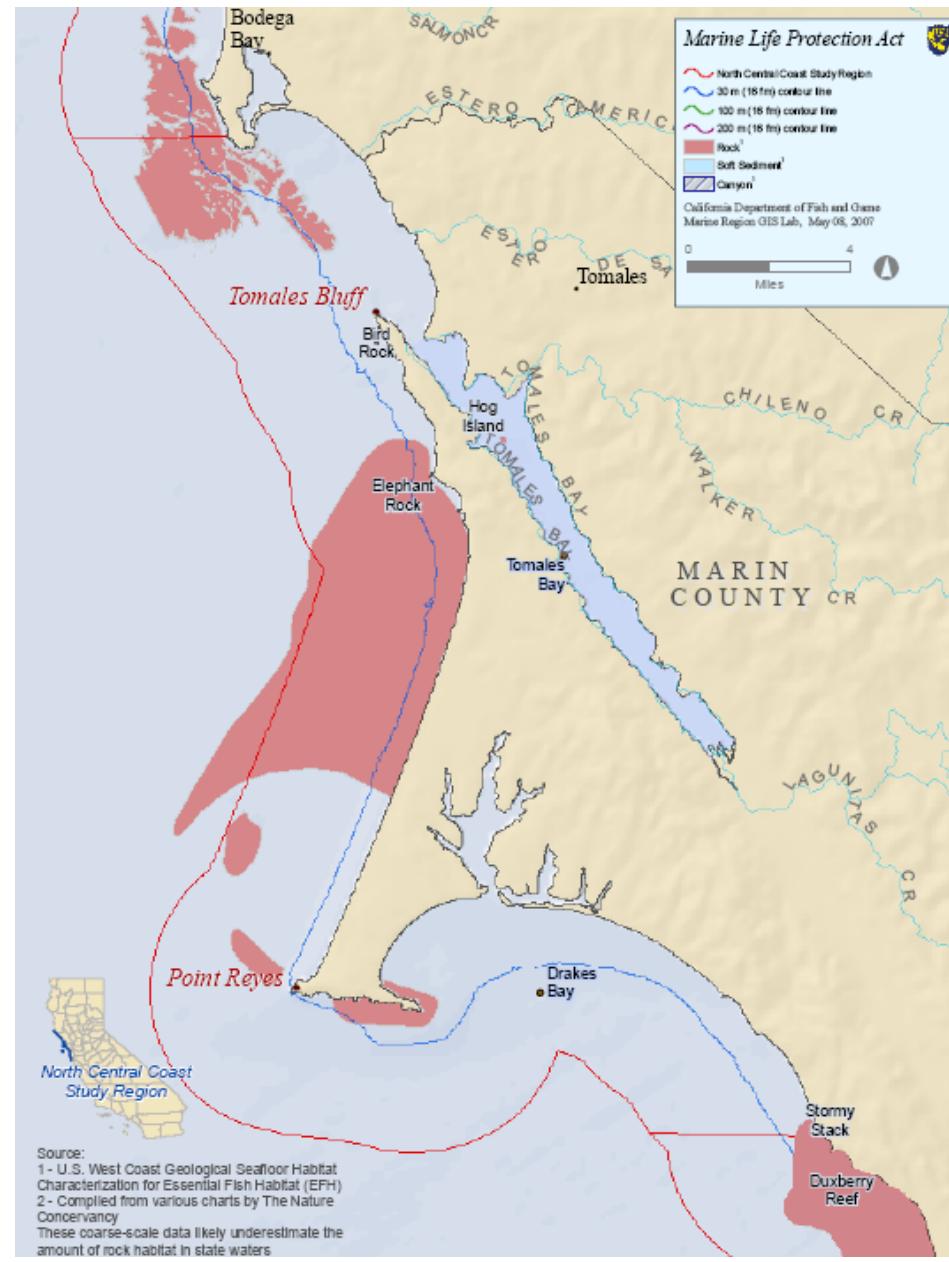
- Study region is generally shallow
 - 39% at 0-30m depth
 - 60% at 30-100m depth
 - < 1% 100-200m depth
- Seafloor habitats not present in region:
 - deep water habitats > 200m
 - submarine canyons
 - seamounts





Seafloor Habitats and Depth Zones

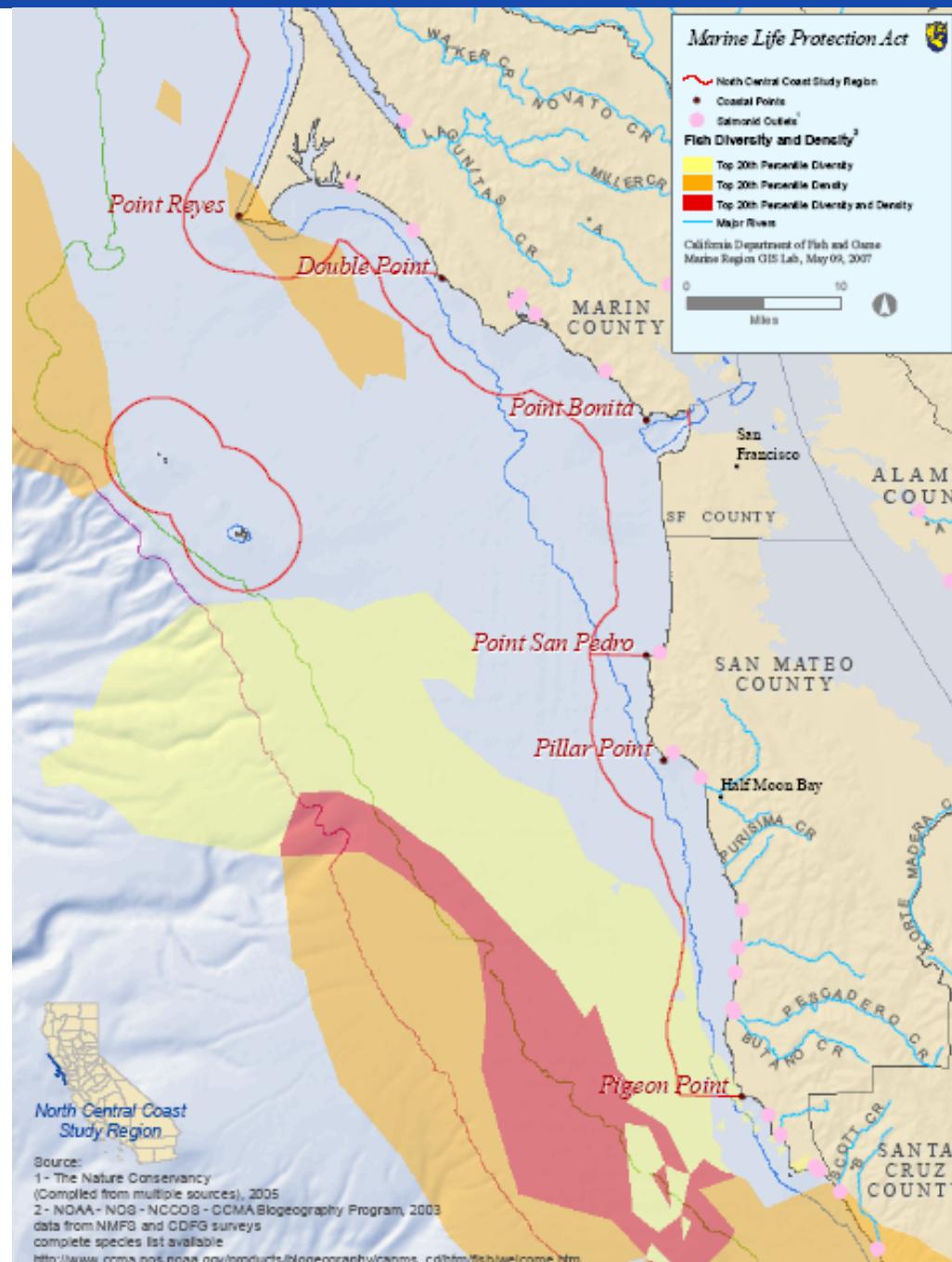
- High resolution seafloor mapping underway; current analysis based on existing coarse-scale data
- Soft bottom more abundant than hard bottom: 15.4% hard / 84.6% soft overall
- 0-30 meters: 21.2% hard / 78.8% soft
- 30-100 meters: 11.8% hard / 88.2% soft
- 100-200 meters: 100% soft
- Note that coarse-scale seafloor data tend to under-represent hard bottom habitats





Species-Level Information

- Seabird and marine mammal colonies
 - Areas of high seabird and fish diversity and density (NOAA biogeographic assessment)
 - Salmonid streams





Species Likely to Benefit from MPAs

Species Likely to Benefit from MPAs – Appendix II

- Developed by central coast SAT
- Will be reviewed by north central coast SAT

California Marine Life Protection Act Initiative
Draft North Central Coast Regional Profile Appendix II - Table a
May 7, 2007

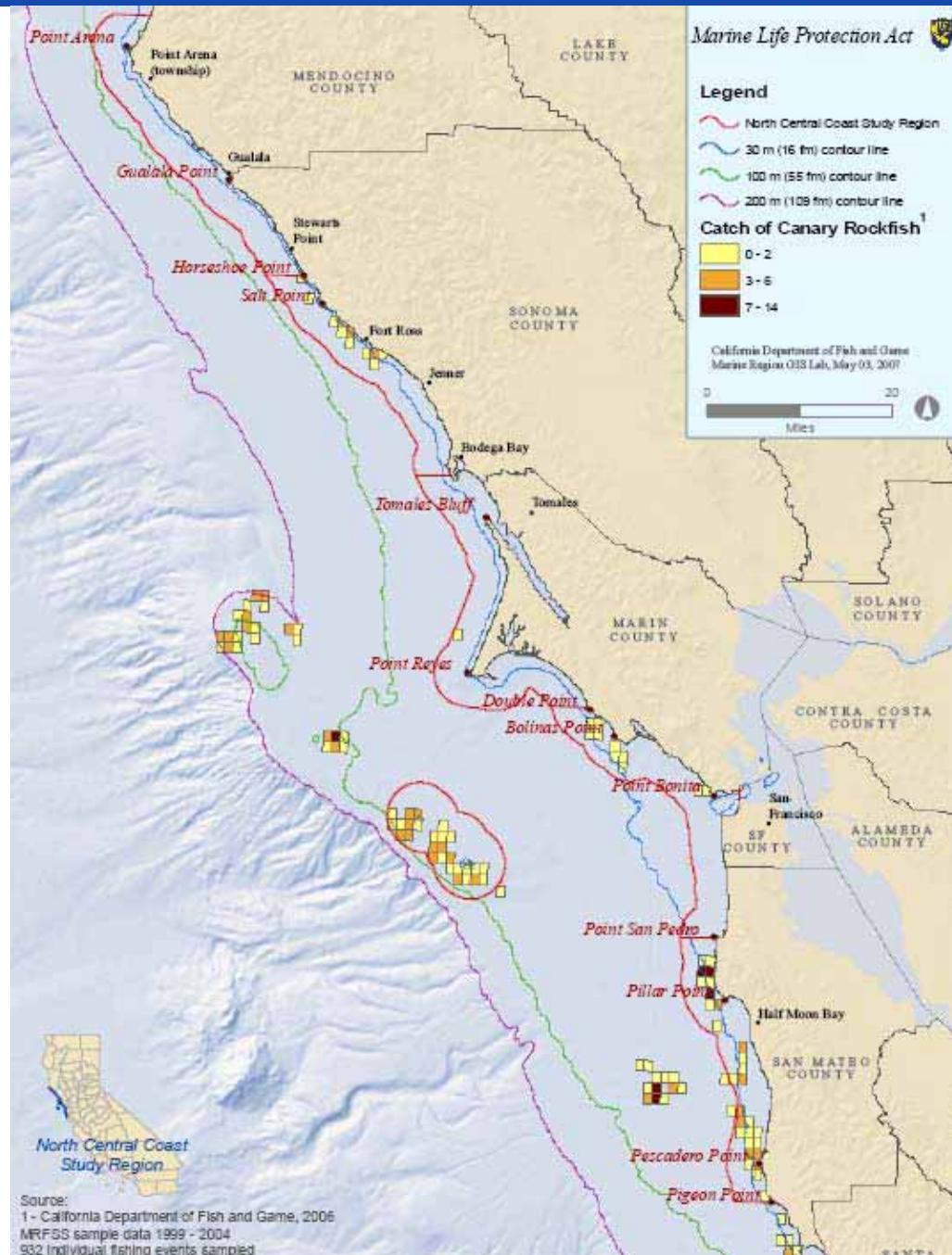
Appendix II: Table (a). List of Fishes Likely to Benefit from the Establishment of Marine Protected Areas (developed for Central Coast Study Region)

Species	Primary depth range in feet (x 0.305= meters)	Primary geographic range within state using four regions	Habitat preference juveniles	Habitat preference adults	Unique or significant life-history characteristics	Larval type	Larval duration [potential larval dispersal]	Potential for adult dispersal
Butterfish (Pacific)	30-300	All	coastal pelagic	coastal pelagic	a schooling species	planktonic	unknown	moderate
Cabezon	0-250	All regions, including islands	rocky reefs, breakwaters, kelp beds, tide pools, open ocean	rocky reefs, kelp beds	eggs adhesive, attach to substrate, often macroalgae	planktonic	3-4 months	low
Croaker, white	0-420	All; most common Point Reyes to Mexico border	near bottom in shallow soft habitat	soft bottom, primarily nearshore and estuaries	schooling; multiple spawning each year; adults in deeper water than juveniles	planktonic larvae become epibenthic	short	low
Eel, wolf-	Intertidal to 600	N, NC, SC	pelagic	rocky reefs, kelp beds	not a true eel; spawn Oct.-February	planktonic?	1-2 months	moderate
Flounder, starry	Shallow -900	N,NC,SC	estuaries and bays, nearshore soft bottom	soft bottom; estuaries and bays to upper slope	spawn near river mouths and estuaries and bay	planktonic	25-75 days	moderate



Depleted or Over-Fished Species

- Abalone
- Groundfish
 - Bocaccio
 - Canary rockfish
 - Cowcod
 - Darkblotched rockfish
 - Widow rockfish
 - Yelloweye rockfish





Special Status Species

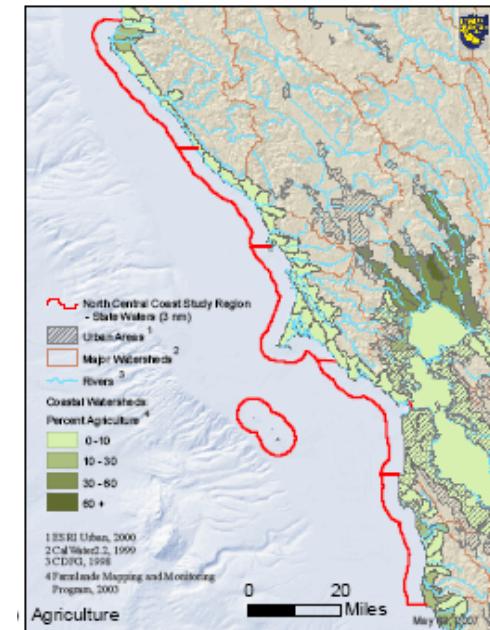
- Anadromous fish – coho & chinook salmon, steelhead, sturgeon
- White sharks
- Seabirds
- Sea otters
- Pinnipeds
- Cetaceans



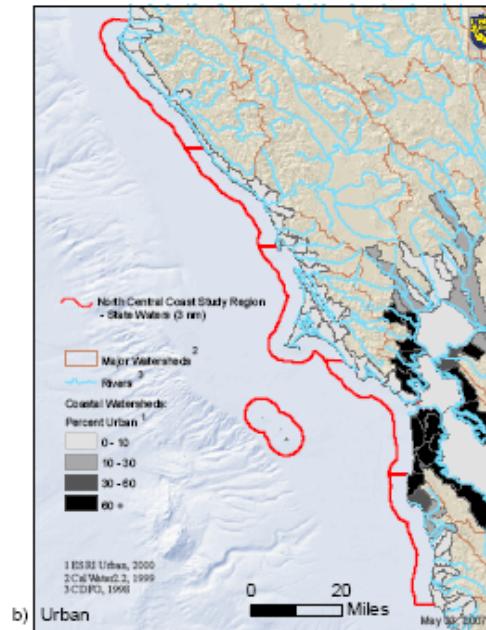


Land-Sea Interface: Coastal Watersheds

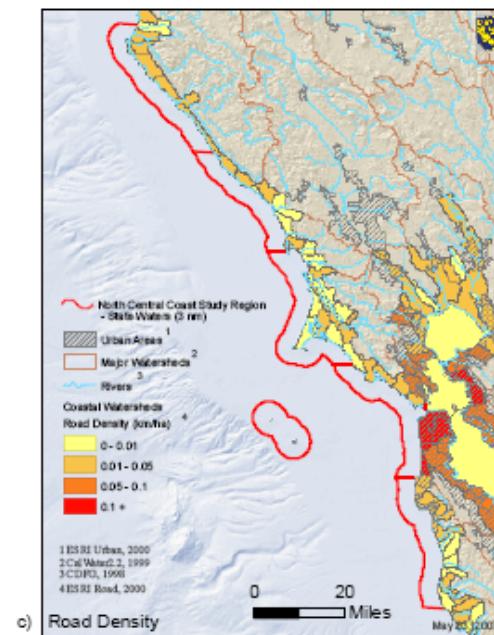
% Agriculture



% Urban



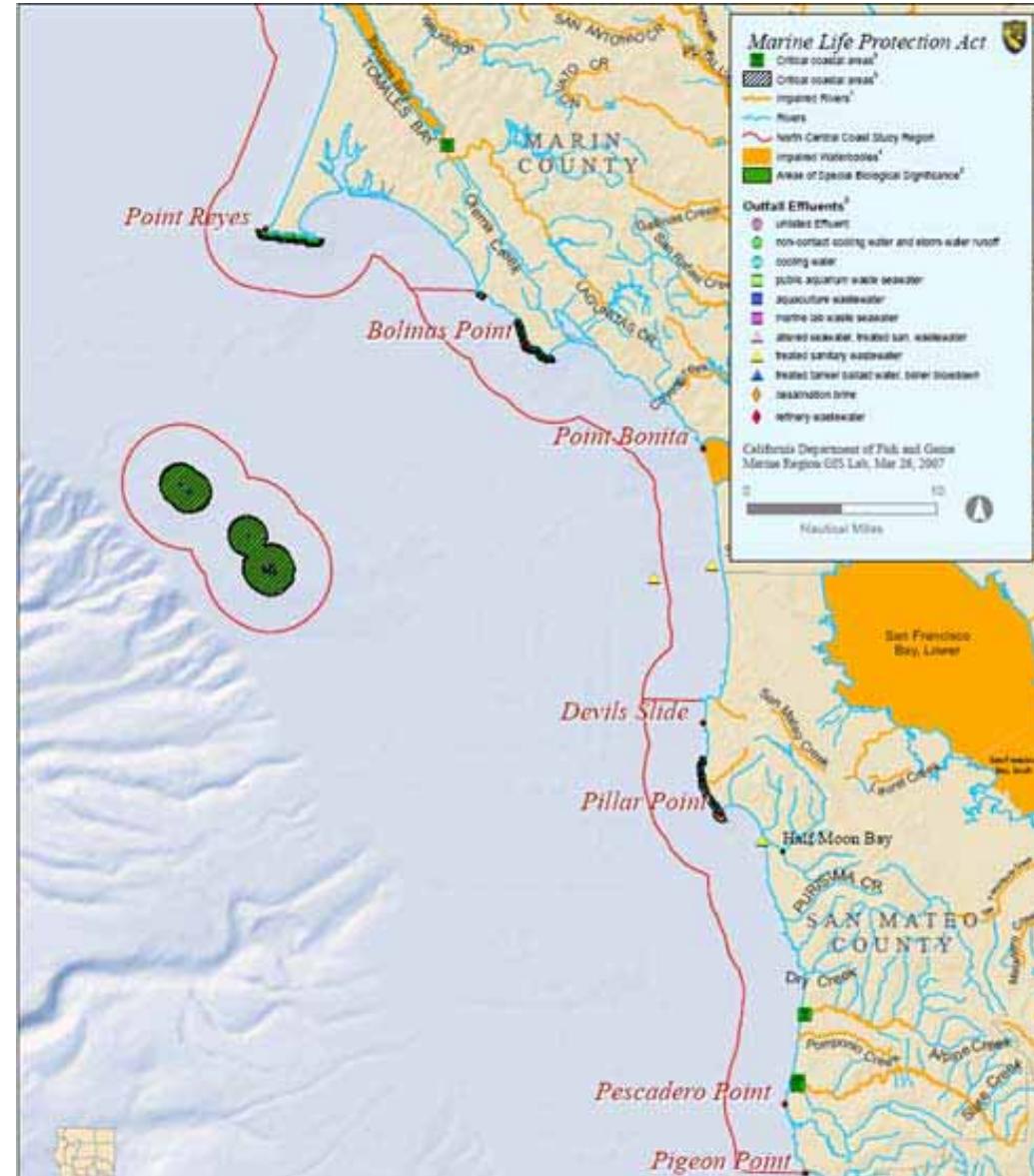
Road density





Land-Sea Interface – Water Quality

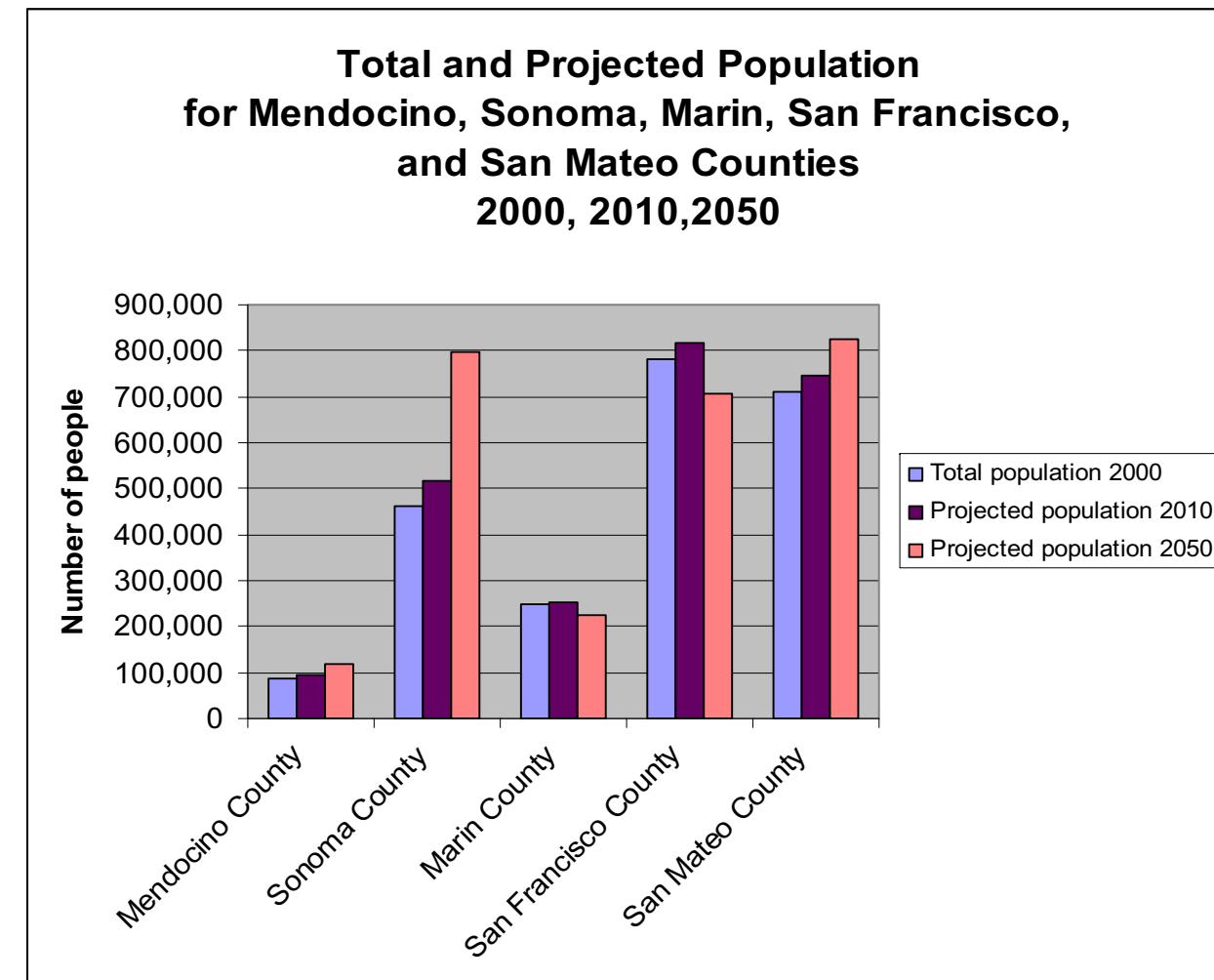
- Impaired water bodies – sediment, temperature, nutrients, pathogens, chemicals
 - SF Bay
 - Coastal streams
 - Tomales Bay
- Point discharges
- Beach closures
- Areas of special biological significance (water quality protection areas)





Socioeconomic Setting – Counties, Ports

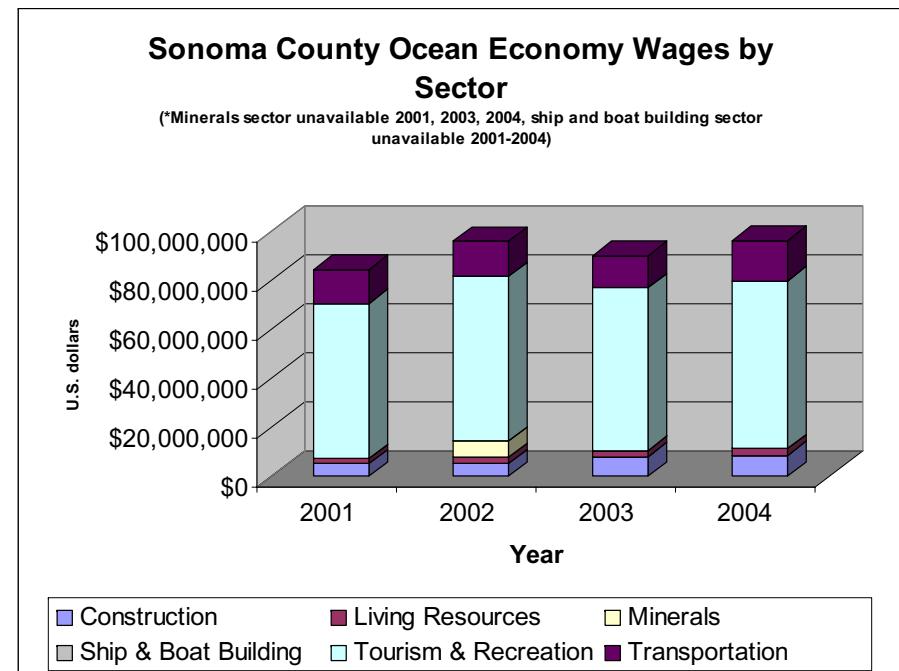
- Five counties:
Mendocino, Sonoma,
Marin, San Francisco,
San Mateo
- County-level info:
population, ocean-based economies
- Port profiles –
Bodega, SF, Half
Moon Bay/Pillar Point





Socioeconomic Setting – Economic Data

- Ocean economy wages for each county
- Beach/coastal park visitation statistics
- Travel spending for each county
- Employment statistics for coastal communities



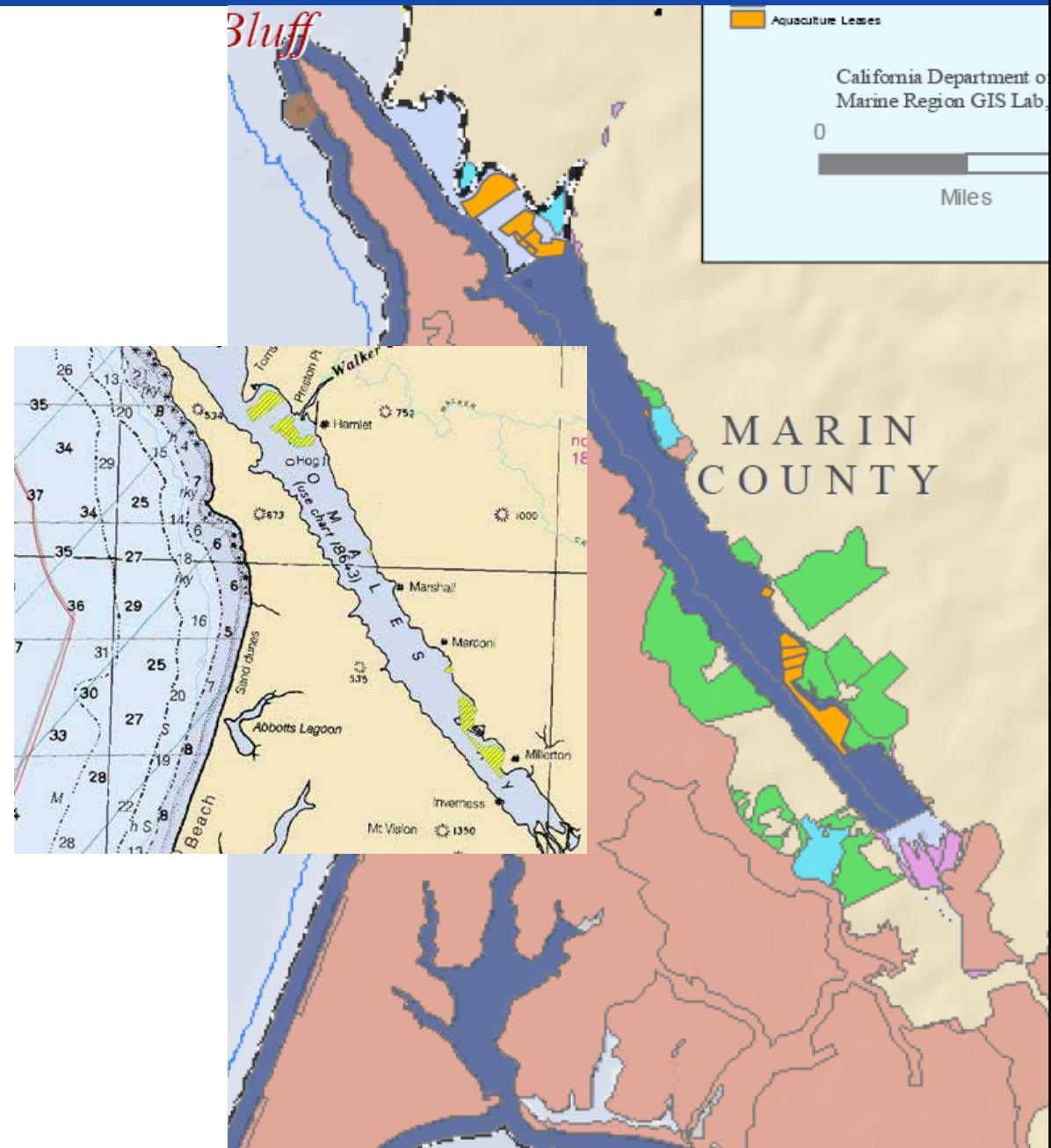
California State Park	County	Total Revenue (Fiscal Year 2004/2005) ¹
Half Moon Bay State Beach	San Mateo	\$605,049
Sonoma Coast State Beach	Sonoma	\$578,847
Ano Nuevo State Reserve	San Mateo	\$245,670
Salt Point State Park	Sonoma	\$230,038
San Gregorio State Beach	San Mateo	\$144,874
Fort Ross State Historic Park	Sonoma	\$127,539
Tomales Bay State Park	Marin	\$69,850
Manchester State Park	Mendocino	\$47,221
Pomponio State Beach	San Mateo	\$27,939
Pescadero State Beach	San Mateo	\$4,356
Gray Whale Cove State Beach	San Mateo	\$446
Bean Hollow State Beach	San Mateo	\$0
Montara State Beach	San Mateo	\$0
Schooner Gulch State Beach	Mendocino	\$0
Pigeon Point Lighthouse State Historic Park	San Mateo	\$0
Marconi Conference Center State Historic Park	Marin	\$0
Point Montara Light Station	San Mateo	\$0
Thornton State Beach	San Mateo	\$0
Pacifica State Beach	San Mateo	\$0



Socioeconomic Setting - Leases

State submerged land leases

- Kelp: all administrative kelp beds closed to leasing
- Existing oyster/mariculture leases (14 leases; Tomales Bay and Drakes Estero)





Socioeconomic Setting – Ocean Uses

- Public access areas (coastal access, piers, harbors, ports, etc.)
- Non-consumptive uses (diving, kayaking, whalewatching, tidepooling, coastal viewing, surfing, etc.)
- Consumptive uses (recreational and commercial fishing)

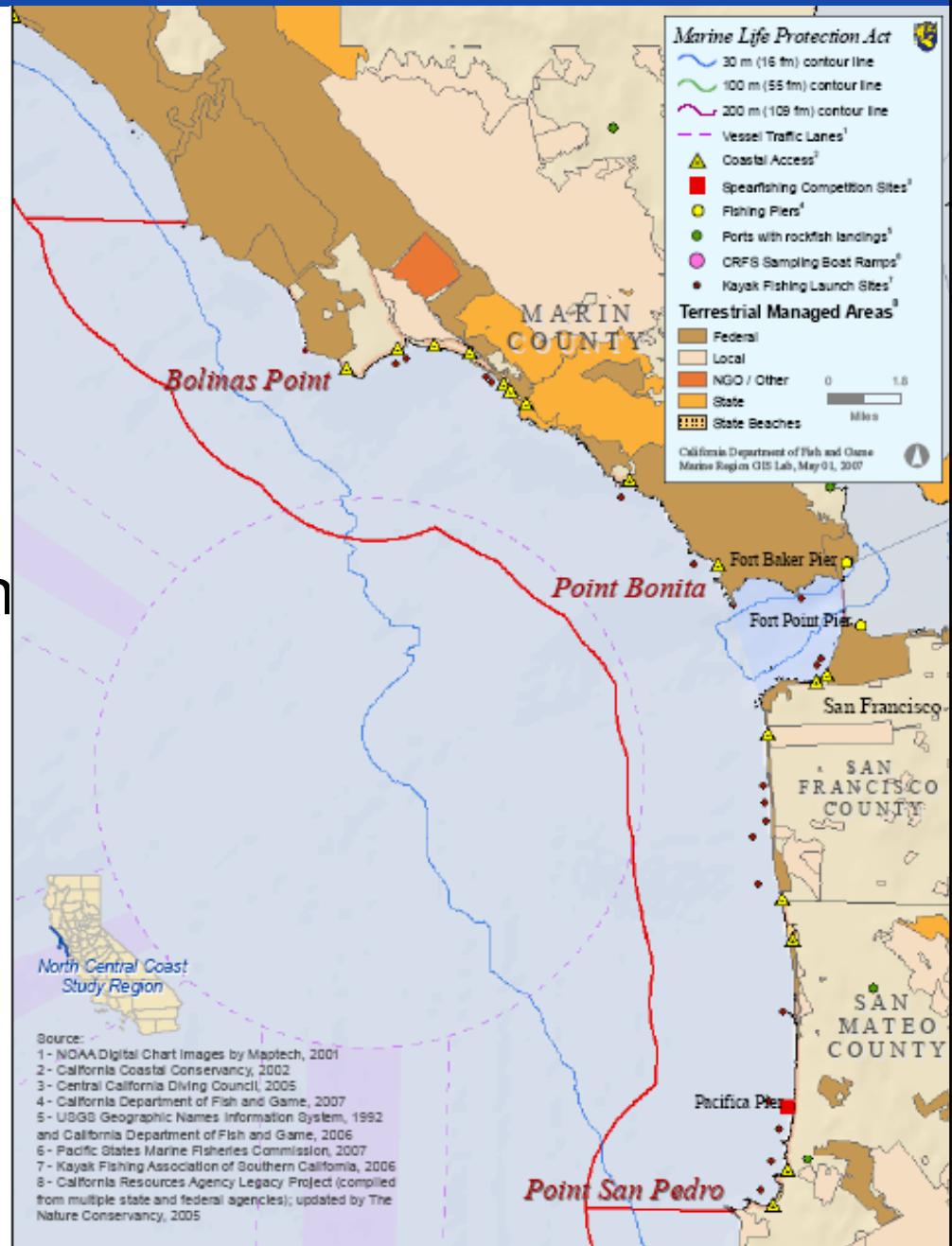




Socioeconomic Setting – Access

Coastal access points

- From California coastal access guide and other sources
- Beach access, piers, launch sites, boat ramps, etc.
- Important for consumptive and non-consumptive activities





Non-Consumptive User Groups

User Group	Spatial Data Available	Other Data Available
Scuba Diving (nonconsumptive)	Coastal access points	Dive guides to Northern California; Beach Watch surveys
UW Photography	No spatial data	Dive guides to Northern California
Tidepooling	Rocky shoreline and coastal access points	
Kayaking	Coastal access points	Kayak Fishing Assoc. of So. CA report; Beach Watch surveys
Whale Watching	No spatial data	
Bird Watching	Coastal access points	
Other Wildlife Viewing	Coastal access points and location of seabird and marine mammal colonies	
Boating	Port, harbor, and boat launch locations	Boat registration by county; boat ramp data (Sonoma)
Surfing	No spatial data	Surf guides to northern California; Surfrider preparing spatial data; Beach Watch surveys
Coastal Viewing	Coastal access points	
Beachgoing	Location of beaches, state parks, national seashores, etc.	Visitation rates from ten state beaches, nine parks, GGNRA, PRNS; coastal access points; beaches mapped. Beach Watch surveys



*Also, Gulf of the Farallones National Marine Sanctuary / Environmental Defense survey information applies to many categories